REMARKS

The present Amendment is in response to the Examiner's Final Office Action mailed June 21, 2007. Claims 12-14 are amended and new claim 22 is added. Claims 1-22 are now pending in view of the above amendments.

Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. In addition, Applicants request that the Examiner carefully review any references discussed below to ensure that Applicants understanding and discussion of the references, if any, is consistent with the Examiner's understanding.

I. 35 U.S.C. § 112, First Paragraph

The Examiner rejects claims 18, 20 and 21 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

According to the Examiner, Claims "18 and 21 contain language including 'the printed circuit board is substantially rigid' on line 2. The specification does not support this claimed limitation or even suggest that the printed circuit board is substantially rigid (as was discussed in prior office actions to the applicant)." Claim 18 actually includes the element, "wherein a portion of the lead frame connector between the optical subassembly and the printed circuit board is substantially rigid." (Emphasis added). Thus, it is the portion of the lead frame connector that is substantially rigid, not the printed circuit board as misconstrued by the Examiner.

Similarly, Claim 21 includes the element, "wherein a portion of the leadframe connector between the optical subassembly and the printed circuit board is substantially rigid." (Emphasis added). Thus, again, it is the portion of the leadframe connector that is substantially rigid not the

printed circuit board. The statements, "between the optical subassembly and the printed circuit board" merely designate the location of the portion of the leadframe connector which is substantially rigid. Clearly, as set forth in claims 18 and 21, the term "substantially rigid" modifies the "portion of the leadframe connector" not the "printed circuit board" as alleged by the Examiner. Therefore, the Applicant respectfully requests that the rejection of claims 18 and 21 be withdrawn.

Regarding claim 20, the Examiner incorrectly alleges, "[c]laim 20 contains language providing that the plastic casing provides mechanical 'stiffness' to the bent portion, which is not supported nor suggested by the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), a the time the application was filed, had possession of the claimed invention. The examiner notes that newly added claim 17 (similar to the language of claim 20) is supported by the specification for the plastic casing providing mechanical 'support,' and suggests that eh applicant follow this direction when amending claim 20 to maintain support from the specification." Initially, the Applicant notes that the plastic casing is inserted injection molded and "provides ... mechanical support for the finished component." Paragraph [0012]. The specification also makes a clear distinction between conventional flexible connectors and the inventive leadframe connectors which lend mechanical support. Thus, as disclosed, such inventive leadframe connectors may be substantially inflexible, and thus substantially stiff, as compared to conventional flexible leadframe connectors. *See* paragraphs [0007], [0008], [0009], [0011], [0012], [0014], [0027], [0032], and [0038].

Moreover, a review of Figures 1a, 1b, and 2e, for example, clearly illustrate such mechanical stiffness that is provided to the bent portion of the leads 18 and 28 encased within the rigid casing. As such, the elements of claim 20 are clearly supported as one of ordinary skill would appreciate that the plastic casing provides mechanical stiffness to the encased bent portion and as a result the lead frame connectors also provide mechanical support for the finished components as disclosed throughout the specification. *See* paragraphs [0007], [0008], [0009], [0011], [0012], [0014], [0027], [0032], and [0038]. As such, the Applicant respectfully requests that the rejection of claim 20 be withdrawn.

II. PRIOR ART REJECTIONS

A. Rejection Under 35 U.S.C. §102(e)

The Examiner rejects claims 1, 2 and 6-21 under 35 U.S.C. § 102(e)[1] as being anticipated by *Ames et al.* (United States Publication No. 2003/0085054). The Applicant respectfully traverses this rejection in view of *Ames*, as *Ames* simply discloses a flexible cable, the same as *Card* (discussed below). Such flexible circuits clearly do not provide mechanical support as alleged, and certainly not within the context of the words "mechanical support" as used in the Applicant's specification.

According to the applicable statute, a claimed invention is unpatentable for obviousness if the differences between it and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. § 103(a) (2005); *Graham v. John Deere Co.*, 383 U.S. 1, 14 (1966); MPEP 2142. Obviousness is a legal question based on underlying factual determinations including: (1) the scope and content of the prior art, including what that prior art teaches explicitly and inherently; (2) the level of ordinary skill in the prior art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness. *Graham*, 383 U.S. at 17-18; *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999).

Analysis supporting a rejection under 35 U.S.C. §103(a) should be made explicit. *KSR Int'l Co. v. Teleflex, Inc.*, No 04-1350 (U.S. Apr. 30, 2007). Moreover, the Patent Office must identify a reason (such as motivation) why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed. *Id.* "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id. quoting In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006).

As admitted by the Examiner on page 7 of the previous Office Action dated October 24, 2006, "*Card* lacks suggestion that the lead frame connector (flexible cable) provides mechanical supported for the optical sub-assembly." *Ames* also discloses a flexible cable, the same as *Card*.

[1] Because *Broberg* is only citable under 35 U.S.C. § 102(e) [or (a) if applicable] Applicants do not admit that *Broberg* is in fact prior art to the claimed invention but reserve the right to swear behind *Broberg* if necessary to remove it as a reference.

See Title, paragraphs [0009], [0010], [0012], [0013], [0015], [0016], [0019], [0020], [0025] – [0027], [0041], [0044], [0047], [0048], [0051], [0052], [0054], [0056], and Claim 1 of *Ames*, for example. In fact, *Ames* clearly indicates that "the flex cable … is relatively flexible to allow the flex cable to be bent at an angle." Paragraph [0041]; *see also* paragraphs [0025] and [0056] indicating that bendability may be enhanced using through holes. Therefore, flexibility and bendability is advantageous in Ames, not rigidity and inflexibility for support. Such clear explanation of a flex circuit enhanced for bendability is in direct contrast to the assertion by the Examiner that Figures 2 and 8-10 show rigidity resulting in mechanical support.

According to the Examiner, "figures 2 and 8-10 … show that there is no additional support for the optical assembly other than the flex cable, and see the support (66) in figure 9 (p.3, [0023] and [0027])." However, such views are clearly described as perspective, partial, elevated, and exploded views. See paragraphs [0029] – [0032]. For example, referring to Figure 1 of *Ames,* various elements are shown in an exploded view. However, it cannot be simply inferred, as the Examiner has done, that each of the elements is to be unconnected or that each element is supported in a void. Rather, such representations are presented so that one can appreciate the embodiments in various perspectives. Therefore, although no additional support for the optical assemblies may be shown in Figures 2 and 8-10, this does not necessarily mean that the flex cable provides mechanical support in *Ames*, and such assertions are in fact in direct contrast to the statements made in *Ames* regarding flexibility and bendability. Rather, the flex cable is explicitly disclosed as being flexible and improved by improved bendability. In fact, the title of *Ames* is explicitly "Enhanced Flex Cable". (Emphasis added). As such, the teachings of *Ames* are indirect contrast to the assertions by the Examiner. As such, the Applicant respectfully requests that the rejection of claims 1, 2 and 6-21 be withdrawn.

B. Rejection Under 35 U.S.C. § 103

The Examiner rejects claims 1-4 and 6-15 under 35 U.S.C. § 103 as being unpatentable over *Card et al.* (U.S. Patent No. 5,295,214) in view of *Ames et al.* (U.S. Publication No. 2003/0085054). The Examiner rejects claim 4 under 35 U.S.C. § 103 as being unpatentable over *Ames et al.* (U.S. Publication No. 2003/0085054) as applied to claim 10 above, and further in view of *Card et al.* (U.S. Patent No. 5,295,214). The Examiner rejects claim 5 under 35 U.S.C. §

103 as being unpatentable over *Ames et al.* (U.S. Publication No. 2003/0085054) as applied to claim 10 above, and further in view of *Liu et al.* (U.S. Publication No. 2003/0026081). The Examiner rejects claim 5 under 35 U.S.C. § 103 as being unpatentable over *Card et al.* (U.S. Patent No. 5,295,214) and *Ames et al.* (U.S. Publication No. 2003/0085054) as applied to claim 1 above, and further in view of *Liu et al.* (U.S. Publication No. 2003/0026081).

Both *Ames* and *Card* disclose flexible circuits. See the Title of *Ames* and flexible ribbon cables 110 disclosed and discussed throughout *Card*. Such flexible ribbon circuits/cables are called flexible because they are easily bent as disclosed therein. Neither *Card*, nor *Ames*, discloses that the flexible circuits/cables provide mechanical support. Rather, it is an unreasonable assumption made by the Examiner which is not supported by the references.

On page 14 of the Office Action, the Examiner notes that "[d]uring patent examination, the pending claims must be 'given the broadest reasonable interpretation." The Examiner also cites to dictionary definition 15 from Dictionary.com, which provides the definition for support as, "a person or thing that gives aid or assistance." However, Webster's dictionary is a better source for ascertaining the meaning of the term "support" as it is modified by the term "mechanical". According to Meriam-Webster's Collegiate Dictionary, the term "support" as it would be understood by one of ordinary skill to mean in the context of the specification is "to hold up or serve as a foundation or prop for...."[2] The Examiner has not shown that *Ames* nor *Card* discloses such mechanical support as would be understood by one of ordinary skill in the art. Such online dictionary definitions, as those at Dictionary.com, are not substantiated, are transitory as they may change at any time, and are not definitions verified to be accurate so as to be relied upon in a rejection.

Moreover, the Examiner's statement of the standard of interpretation is not complete according to the current MPEP Edition 8, revision 6 (2007). According to MPEP 2111.01(I) (2007), "during examination the USPTO must give claims their broadest reasonable interpretation in light of the specification." (Emphasis added); see also *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005). Therefore, the Examiner must show that the definition, "a person or thing that gives assistance" is consistent with the Applicant's specification, and that it is a reasonable definition as it would be understood by one of ordinary skill in the art. Moreover,

[2] *Merriam-Webster's Collegiate Dictionary* (8th Ed 2003)

the examiner must also give the adjective "mechanical" patentable weight as it modifies the meaning of the term "support". It is not just support in the form of "aid or assistance" as asserted by the Examiner, but also it must be mechanical support. It is well known that flex connectors typically use epoxy and an additional support to provide support to the optical subassemblies, for example see 150 in Figure 2 of *Card*.

In fact, the specification of this application makes a direct distinction between the use of a flex connector, as in *Ames* and *Card*, and the support provided by the connectors disclosed therein. For example, Paragraph [0005] of the Applicant's background section makes the following distinction:

> [0005] The electrical connections between the optical sub-assemblies and a printed circuit board (PCB) in the transceiver module have various electrical and mechanical requirements. One of the most common electrical connection components used in conventional optical transceiver modules is a flexible printed circuit board, or "flex circuit," that connects the rigid printed circuit board of the module to leads associated with the TOSA or ROSA. Flex circuits have several advantages, including good electrical performance and radio frequency response and the ability to take up tolerances in the modules and to withstand stresses that arise during manufacture and operation of the modules. Examples of flex circuits used in optical transceiver modules are described in U.S. Patent Application Serial No. 10/409,837, filed April 9, 2003, which is incorporated herein by reference. The foregoing patent application also illustrates other components of optical transceiver modules, such as TOSAs and ROSAs, and includes other general information regarding optical transceiver modules that is useful as background material for the invention described herein.

(Emphasis added).

Paragraph [0009] of the Summary section indicates the following advantages of the inventive connectors and the support provided thereby:

> [0009] The present invention relates to methods for manufacturing or assembling optical transceiver modules using lead frame connectors that electrically and mechanically connect optical sub-assemblies to printed circuit boards. The lead frame connectors enable optical sub-assemblies to be connected to the printed circuit board in optical transceiver modules in a reliable and inexpensive manner. The use of such lead frame connectors eliminates the need for flexible printed circuit boards that have been used in conventional transceiver modules.

(Emphasis added).

In addition, because the inventive connectors provide mechanical support for the optical subassemblies, epoxy and other mechanically supporting features may not be required as was typically the case in conventional flex connector embodiments as disclosed in paragraph [0012] of the present application:

> [0012] In certain embodiments of the invention, the process of connecting the combined ROSA and lead frame connector to the PCB does not require epoxy reinforcement and avoids alignment handling issues that have been experienced in conventional methods of connecting optical sub-assemblies to PCBs using, for instance, flexible printed circuit boards.

(Emphasis added).

In addition, the inventive leadframe connectors exhibit advantages over flex circuits as described in the following portions of the specification:

> [0025] The lead frame connectors of the invention provide several advantages compared to the use of flex circuits or other conventional techniques. Compared to flex circuits, the lead frame connector components are significantly less expensive. In addition, the process of manufacturing a transceiver module using lead frame connectors is more automated and requires less labor. Compared to simply bending the leads of the optical sub-assemblies to permit direct connection to a PCB, the lead frame connectors have significantly better electrical performance and RF response. Moreover, there is no significant risk of damaging the fragile portions of the optical sub-assemblies during the process of connecting the optical sub-assemblies to the PCB.

(Emphasis added).

> [0028] One of the advantages of the lead frame connectors of the invention is that they can have manufacturing costs that are much lower than the costs of manufacturing flex circuits that have conventionally been used in optical transceiver modules. In addition to the lead frame connectors themselves, the embodiments of the invention also extend to methods of manufacturing the lead frame connectors.

(Emphasis added).

> Methods of manufacturing optical transceiver modules using lead frame connectors that connect optical sub-assemblies to printed circuit boards. The lead frame connectors include a conductive lead structure that is encased in an insert injection molded plastic casing. The lead frame connector is aligned with the leads that protrude from the back end of the corresponding optical sub-assembly

> (OSA). The leads pass through corresponding holes in the lead frame connector and are soldered to the conductors of the lead frame assembly. Once the soldering has been performed, the combined OSA and lead frame connector becomes a surface mount device that can then be mounted to the PCB. Assembling an optical transceiver using the lead frame connectors is generally less expensive and more reliable compared to the use of conventional flexible printed circuit board connectors.

(Emphasis added).

In summary, both *Ames* and *Card* clearly disclose flex circuits. It is well known that such flex circuits are not designed to provide mechanical support. In fact, such flex circuits are designed to be easily bendable and are obviously flexible as their name suggests. In direct contrast, as claimed, the present invention includes a leadframe connector that provides mechanical support for an optical sub-assembly. As such, neither *Ames* nor *Card* discloses, nor predictably suggests, the claimed invention.

Therefore, the Applicant respectfully requests that the rejections of claims 1-15.

II. New Claim

Claim 22 has been added and depends from claim 11. Therefore, claim 22 is believed to be allowable for at least the same reasons as claim 11.

CONCLUSION

In view of the foregoing, Applicants believe the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 25th day of October, 2007.

Respectfully submitted,

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